UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,761	03/25/2004	Charles R. Stewart	61683-00004USPT	8658

24238 7590 03/03/2005

JENKENS & GILCHRIST
1401 MCKINNEY
SUITE 2600
HOUSTON, TX 77010

EXAMINER	
MAYER, SUZANNE MARIE	
ART UNIT	**PAPER NUMBER**
1653	

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/809,761	STEWART ET AL.	
	Examiner	Art Unit	
	Suzanne M. Mayer, Ph.D.	1653	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *January 18, 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-15 and 17-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-15 andd 17-21* is/are rejected.

7)☒ Claim(s) *11,13,14,18,20 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *25 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *July 30, 2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. The amendment filed on January 18, 2005 is acknowledged. Claims 1-10 and 16 have been cancelled. Claims 17-21 have been added. Thus claims, 11-15 and 17-21 are currently pending in this application.

Election/Restrictions

2. Applicant's election of Group V, claims 11-15 and SEQ ID No: 8 in the reply filed on January 18, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on July 30, 2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered by the examiner. See attached and signed PTOL-1449.

Drawings

4. The drawings are objected to because in Figures 9 and 10 there is no x-axis label. Likewise in Figure 5 there is neither an x- or y-axis label. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to

avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code on page 2, line 2 of paragraph [10], and p. 5, line 2. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.01. The removal of "http://" from the hyperlinks will overcome this objection.

Claim Objections

6. Claims 11, 13-14, 18, and 20-21 objected to because of the following informalities: The claims contain non-elected subject matter. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 11-12, 19 and 21 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling a method that inhibits bacterial infection by using proteins with bactericidal activity, does not reasonably provide enablement for peptidomimetic small molecules that mimic the activity of these proteins. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

The factors to be considered in determining whether undue experimentation is required are summarized In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988). The court in Wands states: "Enablement is not precluded by the necessity for some experimentation such as routine screening. However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue,' not 'experimentation.' " (Wands, 8 USPQ2d 1404). Clearly, enablement of a claimed

invention cannot be predicated on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." (Wands, 8 USPQ2d 1404). The factors to be considered in determining whether undue experimentation is required include: (1) the quantity of experimentation necessary, (2) the amount or direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

In the instant case the quantity of experimentation would be huge because in order to make small molecules that mimic the activity of the bactericidal proteins, the skilled artisan necessarily needs to know the active site and mechanism of the proteins. And since none of the three-dimensional structures are presently known, a skilled artisan would be required to start at this stage and effort in obtaining the three dimensional structure, alone, is non-trivial. Furthermore, even if the three-dimensional structures were known, the design and testing of the various peptidomimetics to see if the activity was the same, if had the same level of efficacy, and testing of its toxicity all require extensive experimentation. The amount of guidance in the specification is merely a sketchy road map of how to potentially design a peptidomimetic compound with no actual working examples. The nature of the invention is such that even if a peptidomimetic compound of the proteins were made, there is no guarantee of its potency and if actually would possess bactericidal activity. This point is reiterated in the

prior art which clearly shows that the design and creation of peptidomimetics is very complicated and non-trivial.

Thus the claims as stated as such are a mere invitation to a skilled artisan to perform extensive and undue experimentation in order to make and use the claimed invention which is exemplified when Wands analysis and factors are considered in their entirety.

9. Claims 11-12, 19 and 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claims contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

The specification highlights the fact that the inventors were not in possession of the claimed invention at the time of filing. Specifically in Example 5, pages 24-27, it is described how the inventors themselves plan on developing petidomimetics by using either NMR or high-throughput crystallography at their own facilities to obtain the three-dimensional structure of the proteins, followed by mutagenesis studies to map the functional site of each protein etc. It is clear that the process of creating peptidomimetics will occur in the future. For example on p. 26, paragraph 100: "It *should* be possible to identify the target site within the target molecule,.....", the knowledge of the target and active site in a protein is necessarily required in the design of peptidomimetics.

Vas-Cath Inc. V. Mahurkar, 19USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed."* The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." As discussed above, the skilled artisan cannot envision the detailed structures and active site of the proteins which would be necessary to even begin to design and produce peptidomimetics of the bactericidal proteins of the present invention. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating or making it. The compound itself is required. See *Fiers v. Revel*, 25 USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. V. Chugai Pharmaceutical Co. Ltd.*, 18 USPQ2d 1016.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 11-15 and 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wei et al. (1993) cited on the IDS of July 30, 2004. Wei et al. teach that when the *e3* gene product from the *Bacillus subtilis* SPO1 bacteriophage, is overexpressed in *Escheri coli* or *B. subtilis* that it possess bactericidal activity by

shutting off the activity of the host (e.g. the *E. coli* or *B. subtilis*). It is taught that the *e3* gene product inhibits the cell growth and that incorporation of precursors into DNA, RNA and protein was inhibited and that colony formation was prevented (see p. 7893, 2nd column, 1st paragraph, as well as Figures 7 and 8; and p. 7897, 1st column, last paragraph). It should be noted, that at a later date the *B. subtilis* SPO1 bacteriophage gene *e3* was later renamed and today is referred to as gene 44 from *B. subtilis* SPO1 bacteriophage. Thus the protein product in Wei et al. is the same protein product of SEQ ID No: 8, the elected protein sequence of the instant application (see in the specification Table 1, p. 7-8). For purposes of the rest of this Office action, *e3* will therefore be referred to as gene 44. Wei et al. do not, however, teach the method of administering the gene product of *e3/44*.

However, it would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to recognize the bactericidal activity of the gene 44 protein because Wei et al. clearly show the effects that this protein has on preventing bacterial replication and killing its host. Thus upon seeing this data and evidence, one of ordinary skill in the art would be motivated to use this protein product in a method of inhibiting bacterial infection by administering said protein product in an amount effective to kill said bacteria because Wei et al. show that this protein product (which is the same as SEQ ID No: 8) clearly does possess antimicrobial activity.

Conclusion

12. No claim is allowed. However, it should be noted that the Examiner recognizes the unexpected results which culminate in increased bactericidal activity when gene products 44, 50 and 51 are utilized together, and that this would be unobvious to a skilled artisan.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suzanne M. Mayer, Ph.D. whose telephone number is 571-272-2924. The examiner can normally be reached on Monday to Friday, 8.30am to 5.00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon Weber can be reached on 571-272-0925. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SMM
16 February, 2005

ROBERT A. WAX
PRIMARY EXAMINER
Art Unit 1653